

[54] **DIAMOND CUTTER ROCK BIT WITH PENETRATION LIMITING**

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[51] Int. Cl.<sup>2</sup> .... **E21B 9/36**

[58] Field of Search .... **175/329, 330, 336**

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[57] **ABSTRACT**

A rock bit for recovering core samples is described, along with variations for drilling oil wells or the like. In each of these embodiments a plurality of diamond cutters are mounted on the bit body for cutting rock by a shearing action. Each diamond cutter is in the form of a thin diamond plate bonded to a carbide slug that is inserted into the bit body. Means are also provided for limiting the depth of penetration of the diamond cutters into the rock formation being drilled preferably in the form of rolling cone cutters having a plurality of carbide insects protruding from their surfaces. The protrusion of the carbide inserts from the surface of the cutter cones is less than the length of the diamond plate. This limits the depth that the diamond can penetrate in the rock and inhibits damage. Typically the diamond cutters are mounted for cutting one portion of the hole area by shearing action and the rolling cone cutters are mounted for cutting another portion of its area by chipping-crushing action.

**41 Claims, 7 Drawing Figures**

